

contents, and the decay of the entire plant; but to preserve both seed and fibre, the plant should be harvested at the earlier stage, at which time the fibre is at its best condition. If left until the seeds are quite matured, the stem gets hard and woody, and the fibre is apt to get much broken in the subsequent process of separation. Long experience has proved that this is the best time to pull the flax; for although the seeds are not at that time fully ripe, yet if allowed to remain in the sheaf, they will absorb from their integument a quantity of sap to render them sufficiently mature for the purpose of vegetation, though perhaps for commercial purposes their market value may not be so high as if allowed to stand a little longer in the field."

Taking the Crop.—Flax-Pulling Machines.

As it is probable that the ordinary mode of taking the crop, technically called "pulling," will be commonly practised for some years to come in Canada in many localities, a brief reference to it is necessary before alluding to the flax-pulling machines. Flax is pulled, stem and root, by the hand, bound in small sheaves to dry the fibre and ripen the seed thoroughly. It is then stoked, and when cured it may be housed at once. The idea that it is necessary to pull flax by the hand in place of using machinery for gathering it or cutting it, is fast giving way to more advanced opinions.

There can be no doubt that the supposed necessity for pulling flax by hand has been one cause of the neglect of its cultivation, "but it need not be so for the future; it is now found, that when the ground is smooth and well rolled, it may be as well cut with the reaping machine, except for the very finest fibres; in this case a machine for pulling it has been invented, which executes the work with great rapidity, and at a very small expense."* Such is the evidence of competent men in America. —In the United Kingdom Professor Wilson says, "If the tillage operation of the farm have been properly carried out, and the direction given as regards tilth of surface, and rolling after the seed is got in, has been attended to, there is no reason why we should not avail ourselves of the 'mowing machine,' which is now doing such good work in our grass fields, and cut down our flax, as near the ground as possible, in the same manner." For all textile uses, the portion of the fibre, of any value, exists only in the stem above the ground, the lower part of the stem cut off by the mowing machine is worthless for fibre producing purposes, and arrests the process of fermentation when in the "steep."

The ends or butts of the steeped straw are also injurious in the process of dressing the fibre, so that on several grounds the use of the mowing machine is preferable to pulling.

Rippling.

"Rippling," or the process of separating the seed from the straw, is best accomplished with a common rippler or comb soon after the crop is cut; if it be delayed until the winter, it undergoes a beating process, which separates the seed from the capsules without difficulty. Rippling can only be undertaken with safety soon after the crop is pulled, as the fibre becomes too brittle for this process if the plant is permitted to get thoroughly dry. The seeds may either be used directly as food or sold for the extraction of the oil they contain, and the manufacture of oil-cake.

The Rotting Process.

We now arrive at the most serious objection to the extended cultivation of flax, at least in this country and the United States. The rotting process in unskillful hands is always uncertain, and frequently leads to disappointment and serious loss; nevertheless it is essential that this necessary part of flax manufacture should be carried on within a few miles of the spot where the crop is grown, otherwise the expense of carriage of the straw would so far diminish profits as to render flax cultivation unremunerative. About three-fourths of the entire weight of the straw is useless for textile purposes, but it is not useless as fodder or manure. Since the straw will not bear the expense of transportation to any considerable distance, it is clear that the farmer must either consent to perform the rotting, breaking, scutching, and hackling processes as they do in Ireland, or factories for the express purpose of preparing the straw for the manufacturer must be situated near where the flax is grown. A flax district must, as it were, be created, and a factory erected within the limits of the district, just as sawmills are generally built near the supply of timber, instead of remote from it. Experience shows that where a constant supply of flax is cultivated, and enough to support a factory can be relied on, there is never any trouble or difficulties in finding enterprising and capable men willing to erect and work a factory. It is a want of mutual confidence on the part of the grower and the flax-factor which has checked the cultivation of flax in Canada: the factor has not erected his mill, because the farmer showed no reliable disposition to cultivate the flax, and the farmer refused to grow his crop because he was not sure of the factor being ready with his mill to consume it. It is thus that a generation has passed away without any improve-

* Report on Flax and Machinery for making Flax Cotton: By a Committee of the New York State Agricultural Society.